10/710,469 Claims Amendment #2 (February 24, 2006)

[Claims1-14] Canceled.

[CLAIM 15] (Currently amended) Electromagnetic propulsion devices comprising:
a barrel;
a cavity therein which extends the length of said barrel and having:
a breech end opening at one end and
a muzzle end opening at the other barrel end and
a central axis which extends from said [[~~breach~~]] breech end opening to said muzzle end opening ,and
a uniform right section profile to said central axis throughout said cavity [[and]]; and
a first barrel rail and a second barrel rail and said barrel rails are:
power rails, and
parallel to ~~said cavity axis~~ one another , and
located in said barrel cavity's wall, and
electrically insulated from direct electrical continuity with each other, and
each said barrel power rail has:
continuous barrel cavity surface along its length, and
connection means ~~at its breach end~~ to outside said barrel for attachment to a power source; and
a wall conductor assembly comprised of:
a barrel bus that is:
located outside said barrel cavity, and
electrically insulated from direct electrical continuity with said barrel power rails, and
located along the same length of the barrel as said barrel power rails[[,]] ;_ and
a plurality of wall conductors that are:
located outside said barrel cavity, and
parallel to one another, and
oriented orthogonal said barrel cavity axis, and
separated from one another, and
distributed along the length of said barrel bus, and

each said wall conductor of said plurality of wall conductors:
is a continuous insulated conductor between its ends, and
has electrical continuity at one end with said barrel bus, and
includes between its ends a coil that:
circumscribes the barrel cavity one or more times, and
circumscribes the barrel cavity in the same direction from said barrel bus as all other wall conductor coils of said plurality of wall conductors; and
contact means for each wall conductor of said plurality of wall conductors that:
is located proximal the end of said wall conductor that is distal said wall conductor's end with said barrel bus continuity, and
has electrical continuity with said wall conductor's barrel bus distal end, and
extends through a mating opening in the barrel cavity wall and
has surface in the barrel cavity; and
armatures for propulsion through said barrel cavity and
each said armature has:
a central axis that is, with said armature in said barrel cavity, coincident the central axis of said cavity or close and parallel said axis, and
a muzzle end that is, with said armature in said barrel cavity, the armature's end closest to said cavity's muzzle end, and
a breech end that is, with said armature in said barrel cavity, the armature's end closest to said cavity's breech end, and
all right section profiles to said central axis smaller than said barrel cavity's right section profile, and
a permanent magnet that is:
polarized in the direction of said armature axis, and
located midway between said armature's muzzle and [[~~breach~~]] breech ends, and
a forward current shunt that:
is located in the surface of said armature and near the muzzle end of said armature, and
has surface that, with said armature in said barrel cavity, is at and has continuous electrical continuity the cavity surface of said first barrel power rail, and said continuity is sliding electrical continuity with armature movement in the barrel cavity, and

has surface that, with said armature in said barrel cavity, is at and has continuous electrical continuity with said contact means of said wall conductor assembly at the instant barrel cavity location of said shunt surface and said continuity is sliding electrical continuity with armature movement in the barrel cavity, and

said forward current shunt of an armature in the barrel cavity is electrically insulated from direct electrical continuity with said second barrel power rail, and

said wall conductor assembly has additionally, with an armature in said barrel cavity,

forward wall conductors comprised of:

the group of one or more consecutive wall conductors of said wall conductor assembly whose contact means at any instant have said electrical continuity with said forward current shunt surface at said contact means; and

said forward current shunt of an armature in said barrel cavity,

via said shunt's continuous electrical continuity with said first power rail and said shunt's continuous electrical continuity with said forward wall conductors of said wall conductor assembly,

maintains continuous electrical continuity between said first barrel power rail and said forward wall conductors, and,

with power supplied by an outside power supply to said power rails via said connection means of said rails,

maintains a current path between said first power rail, and said forward wall conductors; and

an aft current shunt that:

is located in the surface of said armature and near the breech end of said armature, and with said armature in said barrel cavity,

has surface with continuous electrical continuity with the cavity surface of said second barrel power rail and

has surface at and with continuous electrical continuity with said contact means of said wall conductor assembly at the instant barrel cavity location of said shunt surface and said continuity is sliding continuity with armature movement in the barrel cavity, and

said aft current shunt is electrically insulated from direct electrical continuity with said first barrel power rail[[,]] ; and

said wall conductor assembly has additionally, with said armature in said barrel cavity,

aft wall conductors comprised of:

the group of one or more consecutive wall conductors of said wall conductor assembly whose contact means at any instant have said electrical continuity with said aft current shunt surface at said contact means; and

said aft current shunt of an armature in said barrel cavity,

via said continuous electrical continuity with said <u>second</u> power rail and said continuous electrical continuity with said aft wall conductors of said wall conductor assembly,

maintains continuous electrical continuity between said <u>second</u> power rail and said aft wall conductors, and

with power supplied by an outside power supply to said power rails via said connection means of said rails,

maintains a current path between said power rail and said aft wall conductors; and

said barrel bus of said wall conductor assembly, with an armature in said barrel cavity,

provides continuous electrical continuity between said forward wall conductors and said aft wall conductors of said wall conductor assembly and

with power supplied by an outside power supply to said power rails,

provides a current path between said forward wall conductors and said aft wall conductors; and wherein, with:

an armature in the barrel cavity and

power supplied to said power rail's connection means by an outside source, and

the polarity of said barrel power rails with reference to each other so that:

the magnetic fields of the current in said forward wall conductors interact with the armature's magnet creating forces of attraction on said magnet, and

the magnetic fields of the current in said aft wall conductors interact with the armature's magnet creating forces of repulsion on said magnet, and

said forces of attraction and repulsion on the armature's magnet have cavity axis parallel, muzzle directed components which propel the armature through the barrel cavity from [[~~breach~~]] <u>breech</u> to muzzle.

[Claim 16](Previously presented) Electromagnetic propulsion devices as claimed in claim 15 used as a reversible electric motors wherein:

one of said armatures is retained in the barrel cavity for bidirectional movement therein; and
said armature has additionally power take-off means; and
the direction of said armature's barrel cavity traverse is reversed by reversing the polarities of said barrel power rails with reference to each other so that:
the magnetic fields of the current in said forward wall conductors interact with the armature's magnet creating forces of repulsion on said magnet, and
the magnetic fields of the current in said aft wall conductors interact with the armature's magnet creating forces of attraction on said magnet, and
said forces of attraction and repulsion on the armature's magnet have cavity axis parallel, [[~~breach~~]] <u>breech</u> directed components which propel the armature through the barrel cavity [[~~from~~]] <u>in</u> the muzzle to breech <u>direction</u>.

[CLAIM 17](Currently amended) Electromagnetic propulsion devices comprising:
a barrel; and
a cavity therein which extends the length of said barrel and having:
a breech end opening at one end and
a muzzle end opening at the other barrel end and
a central axis which extends from said <u>breech</u> [[~~breach~~]] end opening to said muzzle end opening and
a uniform right section profile to said central axis throughout said cavity; and
two pairs of barrel rails not both the same and said barrel rails are:
power rails, and
parallel to ~~said cavity axis~~ <u>one another</u>, and
located in said barrel cavity's wall, and
located along the same length of the barrel, and
electrically insulated from direct electrical continuity with each other, and
each said barrel power rail has:
continuous barrel cavity surface along its length and
power connection means ~~at its breach end~~ to outside said barrel for attachment to an outside power source; and
a wall conductor assembly comprised of:

a barrel bus that is:
located outside said barrel cavity, and
electrically insulated from direct electrical continuity with said barrel power rails, and
located along the same length of the barrel as said power rails; and
a plurality of wall conductors that are:
located outside said barrel cavity, and
parallel to one another, and
oriented orthogonal said barrel cavity axis, and
separated from one another, and
distributed along the length of said barrel bus, and
each wall conductor of said plurality of wall conductors:
is a continuous insulated conductor between its ends, and
has electrical continuity at one end with said barrel bus, and
includes between its ends a coil that:
circumscribes the barrel cavity one or more times, and
circumscribes the barrel cavity in the same direction from said barrel bus as all other wall conductor coils of said plurality of wall conductors; and
contact means for each wall conductor of said plurality of wall conductors that:
is located proximal the end of said wall conductor that is distal said wall conductor's end with said barrel bus continuity, and
has electrical continuity with said wall conductor's barrel bus distal end, and
extends through a mating opening in the barrel cavity wall and
has surface in the barrel cavity; and
armatures for propulsion through said barrel cavity and each said armature has:
a central axis that is, with said armature in said barrel cavity, coincident the central axis of said cavity or very close and parallel said axis, and
a muzzle end that is, with said armature in said barrel cavity, the armature's end closest said cavity's muzzle end, and
a breech end that is, with said armature in said barrel cavity, the armature's end closest said cavity's breech end, and
all right section profiles to said axis smaller than said barrel cavity's right section profile,

and a portion of said profiles like said barrel cavity's right section profile but slightly undersized thereof; and

a propulsion bus that includes between its ends a coil which circumscribes the armature axis one or more times, and, that is:

a continuous insulated conductor between its ends, and

located midway between the armature's muzzle and breech ends, and

oriented orthogonal said armature's central axis, and

located in said armature where said cavity's right section profile and said armature's right section profiles are similar, and

located within said armature, in, at or proximal said armature's surface, that in said barrel cavity, is proximal said cavity's surface, and

said propulsion bus, with said armature in said barrel cavity, has:

at one end, surface with continuous electrical continuity with the cavity surface of one of said barrel power rails that is proximal said propulsion bus end and said electrical continuity is continuous sliding electrical continuity with movement of said armature in the barrel cavity, and

at its other end, surface with continuous electrical continuity with the cavity surface of a second of said barrel power rails that is proximal said other end and said electrical continuity is continuous sliding electrical continuity with movement of said armature in said barrel cavity; and

a forward current shunt that:

is located in said armature's surface between said propulsion bus and said armature's muzzle end and,

has surface that, with said armature in said barrel cavity, is at and has continuous electrical continuity with the cavity surface of one of said barrel power rails, and said continuity is sliding electrical continuity with armature movement in the barrel cavity, and

has surface that, with said armature in said barrel cavity, is at and has continuous electrical continuity with said contact means of said wall conductor assembly at the instant barrel cavity location of said shunt surface and said continuity is sliding electrical continuity with armature movement in the barrel cavity, and

said forward current shunt of an armature in the barrel cavity is electrically insulated from direct electrical continuity with the remaining barrel power rails[[,]] ; and

said wall conductor assembly has additionally, with an armature in said barrel cavity,

forward wall conductors comprised of:

the group of one or more consecutive wall conductors of said wall conductor assembly whose contact means at any instant have said electrical continuity with said forward current shunt surface at said contact means; and

said forward current shunt of an armature in said barrel cavity,

via said shunt's continuous electrical continuity with said power rail and said shunt's continuous electrical continuity with said forward wall conductors of said wall conductor assembly,

maintains continuous electrical continuity between said barrel power rail and said forward wall conductors, and ,

with power supplied by an outside power supply to said power rails,

maintains a current path between said barrel power rail, and said forward wall conductors;

each said armatures also has an aft current shunt that:

is located in the armature's surface between the propulsion bus and the breech end of said armature, and

with said armature in said barrel cavity,

has surface that ~~; with said armature in said barrel cavity,~~ is at and has continuous electrical continuity with the cavity surface of a barrel power rail that:

does not have direct electrical continuity with said forward current shunt, and

does not have direct electrical continuity with the propulsion bus when said propulsion bus and said forward current shunt have direct electrical continuity with the cavity surface of the same barrel power rail, and

has surface that ~~; with said armature in said barrel cavity,~~ is at and has continuous electrical continuity with said contact means of said wall conductor assembly at the instant barrel cavity location of said shunt surface and said continuity is sliding electrical continuity with armature movement in the barrel cavity, and

said aft current shunt of an armature in the barrel cavity is electrically insulated from direct

electrical continuity with the other said barrel power rails; and
said wall conductor assembly has additionally, with an armature in said barrel cavity,
aft wall conductors comprised of:
the group of one or more consecutive wall conductors of said wall conductor assembly whose contact means at any instant have said electrical continuity with said aft current shunt surface at said contact means; and
said aft current shunt of an armature in the barrel cavity,
via said shunt's continuous electrical continuity with said barrel power rail and said shunt's continuous electrical continuity with said aft wall conductors of said wall conductor assembly,
maintains continuous electrical continuity between said barrel power rail and said aft wall conductors, and ,
with power supplied by an outside power supply to said power rails,
maintains a current path between said barrel power rail, and said aft wall conductors; and
said barrel bus of said wall conductor assembly, with an armature in said barrel cavity,
provides continuous electrical continuity between said forward wall conductors and said aft wall conductors of said wall conductor assembly and
with power supplied by an outside power supply to said power rails,
provides a current path between said forward wall conductors and said aft wall conductors; and
wherein, with an armature in said barrel cavity, and
with power supplied by an outside power source to:
said connection means of the power rail with said electrical continuity with said forward current shunt, and
said connection means of the power rail with said electrical continuity with said aft current shunt, and
with power supplied by an outside power source to:
said connection means of the power rail with said electrical continuity with one end of said propulsion bus, and
said connection means of the power rail with continuous electrical continuity with the other end of said propulsion bus, and

the polarity of said connections arranged so that:
the magnetic fields of current in said forward walls conductors interact with the current in said propulsion bus creating forces in said propulsion bus with cavity axis parallel, muzzle directed components, and
the magnetic fields of current in said aft wall conductors interact with the current in said propulsion bus creating forces in said propulsion bus with cavity axis parallel, muzzle directed components, and
said cavity axis parallel, muzzle directed force components, propel the armature through the barrel cavity from breech to muzzle.

[CLAIM 18] (Previously presented)Electromagnetic propulsion devices as claimed in claim 17 wherein said barrel cavity has a twist so that:
consecutive right sections at constant axial increments through said barrel cavity have a constant rate of angular rotation about said cavity's axis; and
armatures for use in said barrel cavity have a twist so that:
consecutive right sections at constant axial increments through each said armature has the same constant rate of angular rotation about said armature's axis as said cavity's and
said twist imparts rotation to said armatures during their barrel cavity traverse.

[CLAIM 19] (Currently amended) Electromagnetic propulsion devices as claimed in claim 17 used as a reversible electric motors wherein:
one of said armatures is retained for reversible movement in said barrel cavity, and
said armature has additionally a power take-off means, and
wherein the direction of said armature's barrel cavity traverse is reversed by reversing the polarities with respect to each other of:
said power rail with continuous electrical continuity with said forward current shunt and said power rail with continuous electrical continuity with said aft current shunt,
or of
said power rail with continuous electrical continuity with one end of said propulsion bus and
said power rail with continuous electrical continuity with the other end of said propulsion bus,

so that:

the magnetic fields of current in said forward wall conductors interact with said armature's propulsion bus current creating forces in said propulsion bus with cavity axis parallel, breech directed components, and

the magnetic fields of current in said aft wall conductors interact with said armature's propulsion bus current creating forces in said propulsion bus with cavity axis parallel, [[~~breach~~]] breech directed components, and

said cavity axis parallel, breech directed force components propel the armature through the barrel cavity in a muzzle to breech direction.

[CLAIM 20] (Previously presented) Electromagnetic propulsion devices as claimed in claim 19 wherein each said barrel cavity has a twist so that:

consecutive right sections at constant axial increments through said barrel have a constant rate of angular rotation about said cavity's axis; and

said armatures for use in said barrel cavity have a twist so that:

consecutive right sections at constant axial increments through said armatures have the same constant rate of angular rotation about said armature's axis and

said twist imparts rotation to said armatures during their barrel cavity traverse.

[CLAIM 21] (Previously presented) Electromagnetic propulsion devices as claimed in claim 17 wherein said two pairs of barrel power rails not both the same, is comprised of four separate barrel power rails and

one power rail of the first pair of power rails has continuous electrical continuity with said forward current shunt of an armature in said barrel cavity and

the second power rail of the first pair of power rails has continuous electrical continuity with said aft current shunt of an armature in said barrel cavity, and

one power rail of the second pair of power rails has continuous electrical continuity with one end of said propulsion bus of an armature in said barrel cavity, and

the second power rail of the second pair of power rails has continuous electrical continuity with the other end of said propulsion bus of an armature in said barrel cavity.

[CLAIM 22] (Previously presented) Electromagnetic propulsion devices as claimed in claim 21 wherein said barrel cavity has a twist so that:

consecutive right sections taken at constant axial increments through the barrel have a constant rate of angular rotation about the cavity axis; and

armatures for use in said barrel cavity have a twist so that:

consecutive right sections taken at constant axial increments through said armatures have the same constant rate of angular rotation about the armature axis as said barrel and

said twist imparts rotation to said armatures during their barrel cavity traverse.

[CLAIM 23] (Currently amended)Electromagnetic propulsion devices as claimed in claim 21, used as a reversible electric motor wherein:

one of said armatures is retained for reversible movement in said barrel cavity, and

said armature has additionally power take-off means, and

wherein the direction of the armature's barrel cavity traverse is reversed by reversing the power rail polarities with reference to each other in one of said two pairs of power rails so that:

the magnetic fields of current in said forward wall conductors interact with the armature's propulsion bus current creating forces in the propulsion bus with cavity axis parallel, breech directed components, and

the magnetic fields of current in said aft wall conductors interact with the armature's propulsion bus current creating forces in the propulsion bus with cavity axis parallel, [[~~breach~~]] breech directed components, and

said cavity axis parallel, breech directed force components propel said armature in said barrel cavity in [[~~a~~]] the muzzle towards breech direction.

[CLAIM 24] (Previously presented)Electromagnetic propulsion devices as claimed in claim 23 wherein the barrel cavity has a twist so that:

consecutive right sections through the barrel have a constant rate of angular rotation about the cavity axis per unit axis distance; and

armatures for use in said barrel cavity have a twist so that:

consecutive right sections through said armatures have the same constant rate of angular rotation about the armature axis per unit axis distance; and

said twist imparts rotation to said armature during their barrel cavity traverse.

[CLAIM 25] (Currently amended) Electromagnetic propulsion devices comprising:

a barrel;

a cavity therein which extends the length of said barrel and having:

a breech end opening at one end and

a muzzle end opening at the other barrel end and

a central axis which extends from said [[~~breach~~]] breech end opening to said muzzle end opening and

a uniform right section profile to said central axis throughout said cavity; and

two barrel rails which are:

power rails, and

parallel to ~~said cavity axis~~, to one another and

located in said barrel cavity's wall, and

electrically insulated from direct electrical continuity with each other, and

each said power rail has:

continuous barrel cavity surface along its length and

connection means ~~at its breach end~~ to outside said barrel for attachment to a power source; and

a wall conductor assembly comprised of:

a barrel bus that is:

located outside of said barrel cavity, and

electrically insulated from direct electrical continuity with said barrel power rails, and

located along the same length of the barrel as said power rails; and

a plurality of wall conductors that are:

located outside of said barrel cavity, and

oriented orthogonal said barrel cavity axis, and

parallel to one another, and

separated from one another, and

distributed along the length of said barrel bus, and

each wall conductor of said wall conductor plurality:

is a continuous insulated conductor between its ends, and

has electrical continuity at one end with said barrel bus, and

includes between its ends a coil that:

circumscribes the barrel cavity one or more times and

circumscribes the barrel cavity in the same direction from said continuity with said

barrel bus as all other wall conductor coils of said plurality of wall conductors; and
contact means for each wall conductor of said plurality of wall conductor that:
is located proximal the end of said wall conductor that is distal said wall conductor's end with said barrel bus continuity, and
has continuous electrical continuity with said wall conductor's barrel bus distal end, and
extends through a mating opening in the barrel cavity wall and
has surface in the barrel cavity; and
armatures for propulsion through said barrel cavity and
each said armature has:
a central axis that is, with said armature in said barrel cavity, coincident the central axis of said cavity or very close and parallel the cavity central axis, and
a muzzle end that is, with said armature in said barrel cavity, the armature's end closest the cavity's muzzle end, and
a breech end that is, with said armature in said barrel cavity, the armature's end closest the cavity's breech end, and
all right section profiles to said axis smaller than said barrel cavity's right section profile, and
a portion of said profiles like said barrel cavity's right section profile but slightly undersized thereof; and
a propulsion bus that is:
a continuous insulated conductor between its ends, and
located midway between said armature's muzzle and breech ends, and
oriented orthogonal said armature's central axis, and
located in said armature where said cavity's right section profile and said armature's right section profiles are similar, and
located within said armature, in, at or proximal said armature's surface that in said barrel cavity is proximal said cavity's surface, and
that includes between its ends a coil which circumscribes said armature axis one or more times, and
that has, with said armature in said barrel cavity,
surface at one end with continuous electrical continuity with said cavity surface of one of said power rails and with armature movement in said barrel cavity said

electrical continuity is continuous sliding electrical continuity and
continuous electrical continuity at its other end with propulsion bus-aft shunt circuit means; and
a forward current shunt that:
is located in said armature's surface between said propulsion bus and said armature's muzzle end, and,
with said armature in said barrel cavity,
is proximal the second of said barrel power rails and has surface with continuous electrical continuity with the cavity surface of said power rail and with armature movement in said barrel cavity said electrical continuity is continuous sliding electrical continuity and
is insulated from direct electrical continuity with the first said power rail, and has surface at and with continuous electrical continuity with said contact means of said wall conductor assembly at the instant barrel cavity location of said shunt surface and said continuity is sliding electrical continuity with armature movement in the barrel cavity; and
said wall conductor assembly has additionally, with an armature in said barrel cavity,
forward wall conductors comprised of:
the group of one or more consecutive wall conductors of said wall conductor assembly whose contact means at any instant have said electrical continuity with said forward current shunt surface at said contact means; and
said forward current shunt of an armature in said barrel cavity,
via said shunt's continuous electrical continuity with said power rail and said shunt's continuous electrical continuity with said forward wall conductors of said wall conductor assembly,
maintains continuous electrical continuity between said barrel power rail and said forward wall conductors, and,
with power supplied by an outside power supply to said power rails,
maintains a current path between said barrel power rail, and said forward wall conductors; and
each said armature also has
an aft current shunt that:

is located in the armature's surface between said propulsion bus and said armature's breech end, and,

with said armature in said barrel cavity,

has continuous electrical continuity with propulsion bus-aft shunt circuit means, and

has surface at and with continuous electrical continuity with said contact means of said wall conductor assembly at the instant barrel cavity location of said shunt surface and said continuity is sliding electrical continuity with armature movement in the barrel cavity, and

said aft current shunt of an armature in the barrel cavity is electrically insulated from direct electrical continuity with said barrel power rails; and

said wall conductor assembly has additionally, with an armature in said barrel cavity,

aft wall conductors comprised of:

the group of one or more consecutive wall conductors of said wall conductor assembly whose contact means at any instant have said electrical continuity with said aft current shunt surface at said contact means; and

said aft current shunt of an armature in said barrel cavity,

via said shunt's continuous electrical continuity with said propulsion bus-aft shunt circuit means and said shunt's continuous electrical continuity with said aft wall conductors of said wall conductor assembly,

maintains continuous electrical continuity between said propulsion bus-aft shunt circuit means and said aft wall conductors, and ,

with power supplied by an outside power supply to said power rails,

maintains a current path between said propulsion bus-aft shunt circuit means, and said aft wall conductors; and

said barrel bus of said wall conductor assembly, with an armature in said barrel cavity,

provides continuous electrical continuity between said forward wall conductors and said aft wall conductors of said wall conductor assembly and

with power supplied by an outside power supply to said power rails,

provides a current path between said forward wall conductors and said aft wall conductors; and

said propulsion bus-aft shunt circuit means is comprised :

an electric current bus in said armature that is located:

proximal said current shunts therein, and
between and connecting the end of said propulsion bus distal
said propulsion bus's end with said power rail continuity and said aft current shunt; and
wherein with power supplied to the power rails by an outside power supply so that:
the magnetic fields of current in said forward wall conductors interact with the current in said propulsion bus creating forces in said propulsion bus with cavity axis parallel, muzzle directed components, and
the magnetic fields current in said aft wall conductors interact with the current in said propulsion bus creating forces in said propulsion bus with cavity axis parallel, muzzle directed components, and
said cavity axis parallel, muzzle directed force components, propel the armature through the barrel cavity from breech to muzzle.

[CLAIM 26] (Previously presented) Electromagnetic propulsion devices as claimed in claim 25 wherein said barrel cavity has a twist so that consecutive right sections through the barrel have a constant rate of angular rotation per unit cavity axis distance about said cavity axis; and
said armatures for use in said barrel cavity have a twist so that consecutive right sections through said armatures have the same constant rate of angular rotation per unit axis distance about the armature axis; and said twist imparts rotation to said armatures during their traverse from said barrel cavity's breech to muzzle.

[Claim 27] (Previously presented) Electromagnetic propulsion devices as claimed in claim 25 but wherein said propulsion bus-aft shunt circuit means is comprised:
a third barrel rail that:
is located in said barrel wall, and
has continuous barrel cavity surface along its length, and
is electrically isolated from said barrel power rails,
is parallel said barrel power rails, and
is located along the same barrel cavity length as said power rails; and
additional surface on said propulsion bus that is:
proximal said bus's end that is distal said bus's end with power rail continuity, and
that, with said armature in said barrel cavity,

is at and has continuous electrical continuity with the barrel cavity surface of said third rail and said continuity is sliding electrical continuity with armature movement in thebarrel cavity; and

additional surface on said aft current shunt that,

with said armature in said barrel cavity,

is at and has continuous electrical continuity with the barrel cavity surface of said third barrel rail and said continuity is sliding electrical continuity with armature movement in the barrel cavity; and

said propulsion bus-aft shunt circuit means, with said armature in said barrel cavity,

maintains continuous electrical continuity between said propulsion bus and said aft current shunt and

maintains a current path between said propulsion bus and said aft current shunt, with power supplied by an outside power supply to said power rails.

[CLAIM 28](Previously presented)An electromagnetic propulsion device as claimed in claim 27 wherein

the barrel cavity has a twist so that

consecutive right sections through the barrel have a constant rate of angular rotation about the cavity axis per unit cavity distance; and

armatures for use in said barrel cavity have a twist so that

consecutive right sections through said armatures have the same constant angular rate rotation about the armature axis per unit axis distance, and

said twist imparts rotation to said armature during their barrel cavity traverse.

Patent Application 10/710,469 Claims Amendment #2 of February 24, 2006

Closing Comments

Dear Sirs:

This is an amendment corrects numerous errors and short comings of the new claims submitted in the claim amendment #1 of February 21, 2006.

1) In designs with a twist the power rails etc. change directions with axil distance and the cavity axis dose not; i.e. they are no longer parallel. For the independent claims to be applicable in the twist claims, the expression "...parallel to said cavity's axis.." is changed to "... parallel to each other...". Therefore, line 11 of claims 15, 17 and 25 is changed from "..parallel to said cavity axis,.."to ".. parallel to each other,..", in the forgoing claims amendment.

2) Unlike rial guns, the directions of currents in the power rails of the topic invention are of little importance; therefore, a power rail's connection to outside the barrel can be anyplace along the rail and the restrictive clause "... at its breach end..." in line 16 of claim 15, and line 17 of claim 17 and line 16 of claim 25 is deleted in the forgoing claims amendment.

3) Numerous misspellings, unneeded redundancies, and punctuation errors are corrected in the forgoing claims amendment including:

In claim 15 line 7 the extra 'and' before the semicolon is removed.

In claim 15 line 22 of"... rails, and..." is replaced by "... rails; and...."

In claim 15 lines 96 & 98 "...said power rail..." is modified to "... said second power rail..."

In claim 16 line13 of '...from the muzzle to breech. ..' is changed to '...in the muzzle to breach direction."

In claim 17 line 54 "... times, and, is:..." is changed to "... time, and, that is: ..."

In claim 17 lines 102 & 108 the redundant phrase "... with said armature in the barrel cavity,..." is removed.

In claim 23 line 14 "...cavity in a muzzle ..." is changed to "... cavity in the muzzle..."

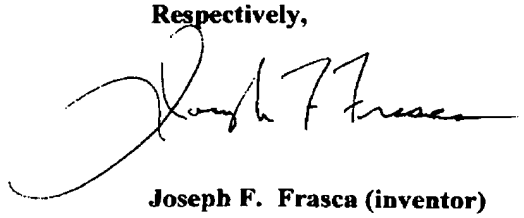
In claim 17 line 69 "....continuity movement..." is changed to '... continuity with movment..."

4)In the current amendment the strikeout of the word "breach" may not be easily seen and therefore the word is double bracketed; e.g. breech [[breach]].

5) Additional corrections not discussed above are noted in the text of the forgoing amendment.

Thank you for your attention.

Respectively,



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